

# ATOMIC ENERGY *newsletter*<sup>®</sup>

A SERVICE FOR INDUSTRY BUSINESS ENGINEERING AND RESEARCH  
ROBERT M. SHERMAN, EDITOR. PUBLISHED BI-WEEKLY BY ATOMIC ENERGY NEWS CO., 1000 SIXTH AVENUE, NEW YORK 18, N.Y.

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Dear Sir:

Apparatus for research into controlled thermonuclear reactions is to be designed and fabricated by Allis Chalmers Manufacturing Co., and Radio Corp. of America, under contract now being negotiated between Princeton University and the two firms. The apparatus, which will comprise the model C Stellarator, will be used for Princeton's thermonuclear experimental work (project Matterhorn), which is supported by USAEC grant. A price of about \$5 million has been set by the Commission on the project. (Other CONTRACT NEWS, p. 2 this LETTER.)

New sales representatives recently appointed by firms in the nuclear field are now giving southern and eastern United States coverage for R. S. Landauer Jr., & Co., and Universal Transistor Products Corp. Under the new arrangements, Atomic Associates, Inc., are now handling sales for Landauer film badge service in the east and south; their sales representatives work out of offices maintained in Lexington, Mass.; Jamaica, N.Y.; Philadelphia, Pa.; and Monroeville, Pa. M. M. Newman Co., Boston, are now selling for Universal Transistor the company's line of nucleonic and electronic instruments, covering New England and most of New York State. (Other MANUFACTURERS' NEWS, p. 4 this LETTER.)

Higher level of uranium production has been set by South African mines for the first six months of this year, as compared with similar 1956 period. Some 10,335,444 long tons were recovered by the African gold mines from tailings, resulting in production of 5,229,547 lbs. of uranium oxide..... First uranium production plant is to be set up shortly by Degussa, of Frankfurt, at Hesse. Vacuum melting will be employed to produce natural uranium..... First work has been started by Toyo Zirconium Co. on factory in Saitama prefecture, Japan. Rated capacity will be 30 tons of zirconium per month. Firm states that entire output has been contracted for by the USAEC. (Other RAW MATERIAL NEWS, p. 5 this LETTER.)

First general conference of the International Atomic Energy Agency, meeting in Vienna, completed election of its 23-nation governing board last fortnight in Vienna. Elected director-general of the Agency was W. Sterling Cole, of the U. S., who has been serving in Congress as Representative from N. Y. (Mr. Cole is an original member of the Joint Congressional Committee on Atomic Energy, which was set up in 1946 by Congress, and was chairman of the Committee from 1952 to 1954.) Acting as U. S. representative on the agency's governing board was Robert McKinney, Santa Fe, N.M., newspaper publisher, serving under a recess appointment.

Feasibility study on the use of nuclear energy for railroad locomotive propulsion is being continued by Baldwin-Lima-Hamilton Corp., and the two other companies associated with it in the study: Denver, Rio Grande & Western Railroad, and Walter H. Kidde Associates. Results of the studies have sufficiently progressed to warrant further investigation, a Baldwin-Lima spokesman explained. Accordingly, managements of the three companies have now set up a long range program of continuing development research. (Other BUSINESS NEWS, p. 2 this LETTER.)

ATOMIC ENERGY BUSINESS NEWS...

NEW NUCLEAR POWERED SUBMARINE LAUNCHED:- First nuclear powered submarine to be constructed on the Pacific Coast--the Sargo--was launched last week at the Mare Island Naval shipyard. Propulsion equipment for the Sargo (as well as for four other nuclear powered submarines now under construction) was built under a Navy contract by Westinghouse Electric Corp. at the firm's Sunnyvale, Calif., division. Included in the contract, which the company received earlier this year, are turbines, gears and condensers. Reactor for the Sargo is of the pressurized water type, similar to that of the Nautilus (first U.S. nuclear propelled undersea craft) but incorporating advances in reactor design. As a result, construction of a small craft to satisfy special Navy requirements was possible. (Design and development of the Sargo reactor plant was done at the Bettis facility which Westinghouse operates as prime USAEC contractor in Pittsburgh, Pa.)

OPERATIONS START AT FIRST COMMERCIAL CANADIAN NUCLEAR MANUFACTURING PLANT:-

The first privately owned manufacturing facility in Canada to produce fuel elements is now in operation with the recent start up of AMF Atomics (Canada) Ltd., Port Hope, Ontario. A subsidiary of American Machine & Foundry Co., New York, the Canadian firm's Port Hope plant and laboratory will manufacture fuel elements for the NRX and NRU reactors at Atomic Energy of Canada's Chalk River project and other installations, and also do research, development, and production on research and power reactors.

WORLD'S LARGEST NUCLEAR POWER STATION NOW UNDER CONSTRUCTION:- Largest nuclear power station in the world is now under construction at Hinkley Point, in Somerset, England, by the English Electric, Babcock & Wilcox, Taylor Woodrow Group. Cost of the project will be about £60 million, with the contract awarded the Group one of the largest ever placed in Great Britain. Designed for a net electrical output of 500,000 KW, power will be generated at 13.8 KV to feed into the national grid. Two reactors are to be built, using natural uranium fuel; they will be of the gas-cooled, graphite-moderated type. Of interest is that each reactor will produce nearly 1,000 megawatts of heat; they will be connected to six axial-flow gas circulators and six steam-raising units.

ATOMIC ENERGY CONTRACT NEWS...proposals asked, bids let...

PROPOSALS ASKED:- U. S. firms have been invited by the USAEC to submit proposals on a cost basis with maximum ceiling price to design, develop, construct and test operate a boiling water nuclear reactor and conventional fuel-fired superheater power plant with a design capacity of 22,000 net KW of electricity to be installed in the system of the Rural Cooperative Power Association, Elk River, Minn. (This new invitation is being issued because agreement on ceiling price could not be reached between American Machine & Foundry, who were originally to do the job, and the USAEC. Lack of agreement on construction prices also resulted in recent cancellation of USAEC plans to award Foster Wheeler Corp. contract for 10,000 KW nuclear power plant to be operated by Wolverine Electric Cooperative, Big Rapids, Mich. Foster Wheeler had fixed the cost of developing and constructing the plant at \$14,436,000; the Commission had asked that budget of \$5,472,000 should handle the job.)

PROPOSALS MADE:- Thirty-one proposals have been received by the USAEC from architect-engineering firms for the engineering design of a natural uranium, gas-cooled, graphite-moderated nuclear power plant of 40,000 electrical KW capacity. Proposals had been made in response to the USAEC's invitation of August 31, 1957, and are now being evaluated by Commission selection board. (Some \$3 million had been appropriated by Congress last session for development, design and engineering work on the plant, which is to be an advanced type of the Calder Hall (Great Britain) reactor. Law requires that a report, including cost estimates and construction schedules, be submitted by USAEC to the Joint Committee by April 1.)

CONTRACTS SIGNED:- Contract for the operation of a new Nuclear Training Center to be constructed at Rio Piedras and Mayaguez by the USAEC has been signed by the Commission and the University of Puerto Rico. Last session of Congress appropriated \$2.8 million to start construction of the center which in its first phase includes a 1,000 KW pool type reactor to be completed by 1960 and a training facility, both to be located at Mayaguez. Later, research facilities for medical and biological nuclear applications are to be established at Rio Piedras. Under the contract, USAEC will pay construction costs and expenses of operating the Center, and the University will operate and manage it without fee.

ATOMIC ENERGY FINANCIAL NEWS...

NUCLEAR FIRM IN PUBLIC STOCK OFFERING:- Nuclear Science & Engineering Corp., Pittsburgh, intends to make public offering through Hayden, Stone & Co., New York, of 100,000 shares of 25¢ par common stock at price to be announced. Company said it will use proceeds to prepay indebtedness in amount of \$235,000 to Norden-Ketay Corp., which collaborated in its organization in 1954 and which owns 100,000 shares representing 76% of its outstanding stock. Monies will also be used to purchase \$8,000 worth of additional equipment, with the balance added to working capital. (Gordon Dean, former USAEC Chairman, is board chairman of Nuclear Science.)

URANIUM MINING TO RETURN PROFIT TO INVESTMENT COMPANY:- Atlas Corp., which controls about 3.5 million tons of uranium ore, or about 5% of U. S. proven reserves, will get back the full value of its investment plus a clear profit of 10% a year, Floyd B. Odlum, Atlas president, recently told the company's annual meeting in New York. Uranium holdings of Atlas accounted for some 40% of the closed-end investment company's total assets of about \$109 million in its June 30, 1957 report. Mr. Odlum predicted that the company's cash realization on its mining and milling activities after costs and applicable taxes by the end of 1958 could be about \$12 million. (He also noted that Atlas had sustained a \$3.5 million loss on the Delta mine bought from prospector Vernon Pick in August, 1954, and now all but abandoned.)

NUCLEAR WEAPONS NEWS...

UNITED STATES:- New series of tests of nuclear weapons is scheduled by the U. S. to begin April, 1958, at the USAEC's Eniwetok Proving Ground in the Pacific. One objective of the tests will be further development of nuclear weapons with reduced fallout so that radiation hazard may be restricted to the military target. A U.N. agency is to designate an international group to observe one of the detonations involving limited fallout. Studies are now underway to determine how an instrument setup may facilitate such observations, without disclosing military secrets.

AUSTRALIA:- The largest nuclear explosive device fired so far by the team of British scientists and other UKAEA people at the Maralinga test site here, was the final one of the current series being conducted by the group. The device was of greater explosive force than any of the previous eleven set off in Australia or at the Monte Bello Islands weapons testing site. This was the fifteenth nuclear device detonated by the British including the fusion weapon tests conducted at Christmas Island.

SOVIET UNION:- Fourth nuclear explosion in the current series of tests being conducted since August 23rd, 1957 by the Soviet Union occurred last Thursday (Oct. 10). This was a small explosion at a site north of the Arctic Circle.

NEW BOOKS, FILMS & PUBLICATIONS...on nuclear subjects...

PUBLICATIONS:- Measurement of Soil Moisture and Density by Neutron and Gamma Ray Scattering. No. PB-127854. Work done under sponsorship of Civil Aeronautics Administration. (Microfilm \$2.70. Photostat \$4.80)..... Nuclear Meters for Measuring Soil Density and Moisture. No. PB-127840. Later work under CAA sponsorship. (Microfilm \$1.80. Photostat \$1.80) --Library of Congress, Washington 25, D.C.

Measurement of Radon Gas in Cylindrical Ionization Chambers. No. PB-131186 (50¢)..... Theoretical Analysis of the Response of Proton Recoil Type Neutron Detector. No. PB-131204. (\$1.50). Work done at Wright Air Development Center, Dayton, Ohio..... Project of a 420 MW Atomic Electric Station. Translation from the Russian of paper presented at World Power Conference, Belgrade, June 1957. No. AEC-TR-2941. (25¢) --Office of Technical Services, Washington 25, D. C.

Nuclear Radiation in Food & Agriculture, by Ralph W. Singleton, University of Virginia. Final volume in the Geneva Series on Peaceful Uses of Atomic Energy. -- D. Van Nostrand Co., Inc., 120 Alexander St., Princeton, N.J. (\$7.50)

Elements of Heat Transfer, by Max Jakob and George A. Hawkins, Third edition of this useful text. 317 pages. --John Wiley & Sons, Inc., New York 16, N.Y. (\$6.75)

FILMS:- Films taken during construction of Calder Hall nuclear power station, and the fast breeder reactor at Dounreay, Caithness, have been made for the U. K. Atomic Energy Authority by Ace Distributors, Ltd., 14 Broadwick St., Wardour St., London W. 1, England. Films made to date include: (1) Construction of Calder Hall, 40 mins., (2) Heat Exchangers at Calder Hall, 28 mins., (3) Engineering at Calder Hall, 39 mins., and (4) The Dounreay Sphere, 35 mins.

PRODUCTS, PROCESSES, INSTRUMENTS...

NEW PRODUCTS FROM MANUFACTURERS:- New scaler-ratemeter, model RCR-2, designed originally for the USAEC's science instructor training program, provides a ratemeter plus a 100-scaler which activates a four-digit high speed register displaying up to 1 million counts. --Nucleonic Corp. of America, Brooklyn 51, N.Y.

New radioactive compounds made available by this processor include 2.4 dichlorophenoxy acetic acid; 1-naphthalene acetic acid-C-14; 1-naphthalene acetamide-C-14; and neopentyl glycol-C-14. --Tracerlab, Inc., Waltham 54, Mass.

MATERIALS SUPPLIED:- Twenty-six uranium fuel elements, containing about 2.5 kg of uranium-235, five tons of heavy water, and neutron sources are to be loaned Massachusetts Institute of Technology by the USAEC for use in MIT's research reactor, now being built there. Reprocessing of the fuel elements will be done by the USAEC without charge, and heavy water will be made available for continued operation.

REACTOR NOTES:- New method of reactor maintenance, involving use of freezing techniques, as applied to the experimental boiling water reactor at Argonne National Laboratory, was described last fortnight by J. M. Harrer, reactor project manager, before American Institute of Electrical Engineers' meeting in Chicago. The operation involved freezing water in the lower portion of one of the nine control rod thimbles. (The thimbles are six foot long pipes leading into the control rod drive mechanism, below the reactor vessel.) Freezing was done to provide an ice dam so that maintenance could be carried out below the freezing point without danger of releasing radioactive water from the reactor core. The maintenance work was done in about 8-hours; the alternative, draining water from the core, would have taken approximately six days of work, around the clock.

First nuclear reactor designed for the custom production of radioisotopes, as well as training and research, is to be built by General Atomic division of General Dynamics Corp. at its San Diego laboratory. Called TRIGA, this multi-purpose reactor is one of the three types being developed by General Atomic to use the new inherently safe, solid homogeneous reactor core now undergoing critical assembly testing at the company's laboratory.

First shipment to Greece was made last week from New York of components for nuclear reactor which is to be built at the Democritus Nuclear Research Center, near Athens. The 1,000 KW pool-type research reactor is being designed and built for the Greek government by AMF Atomics division of American Machine & Foundry, at stated cost of \$448,160. Construction is scheduled to start this month, with the reactor expected to be in operation by Spring of 1958.

Core of the pressurized water reactor at the Shippingport, Pa., nuclear power plant has been loaded by the builder, Westinghouse Electric. It is expected that with this final assembly step the reactor may go critical shortly. The plant will be the first commercial nuclear power facility in the U. S.

MANUFACTURERS' LITERATURE:- Newly issued two page catalog sheet describes model 210 scaler of Radiation Instrument Development Laboratory, 5737 S. Halstead St., Chicago 21, Ill.

New leaflet describes isotope transporting containers marketed by Savage & Parsons, Ltd., Watford, Herts., England. These lead containers are made to the design and specifications of the U. K. Atomic Energy Authority.

ATOMIC ENERGY PATENT DIGEST...latest grants...

ISSUED October 8, 1957 to PRIVATE ORGANIZATIONS AND/OR INDIVIDUALS:- (1)- Nuclear current converter. John H. Coleman, inventor. No. 2,809,306 to John H. Coleman. (2)- Fission counter. W. Baer, R. T. Bayard, O. F. Swift, inventors. No. 2,809,313 assigned to Westinghouse Electric Corp., E. Pittsburgh, Pa.

ISSUED October 8, 1957 to GOVERNMENT ORGANIZATIONS:- (1)- Electronic digital computer. J. J. Stone, Jr., E. R. Mann, E. R. Bettis, inventors. No. 2,808,986 assigned to USAEC. (2)- Solvent extraction process. A. A. Jonke, inventor. No. 2,809,091 assigned to USAEC. (3)- Nuclear reactor. H. E. Metcalf, inventor. No. 2,809,157 assigned to USAEC.

NOTES:- New group of 50 patented inventions, developed during the course of USAEC-sponsored research, has been made available for industrial use on a royalty-free (non-exclusive) basis by the Commission. The group comprises all those issued and assigned to the USAEC for the period June 4, 1957 - July 30, 1957 inclusive, and previously published in this NEWSLETTER.

RAW MATERIALS...prospecting, mining, marketing...

UNITED STATES:- Known uranium reserves in the U.S. constitute about a 10-year supply, according to Jesse C. Johnson, director of the division of raw materials of the USAEC. Mr. Johnson noted that although there had been large increases in the U.S. in the output of uranium ores and concentrates in recent years, there had been no uranium oxide available for stockpiling for commercial uses. By the end of 1957, uranium concentrates milled per year in the U.S. should reach 9,000 tons; by the end of 1958, new facilities will bring production to about the 14,000 ton per year rate.

CANADA:- Stanrock Uranium Mines' program, which is designed to bring production in with capacity of 3,300 tons per day, was said to be on schedule, by an official of the mine, with March, 1958 as projected initial milling date. Stanrock, in the Blind River district of Northern Ontario, holds sales contract with Eldorado Mining & Refining for sale of \$95 million in uranium oxide precipitates to the end of Mar., 1963.

With initial milling operation now underway at the Lake Nordic property of Northspan Uranium Mines, company officials feel that by the end of the year the Lake Nordic mill will be up to its rated capacity of 4,000 tons of ore per day; it is now being run-in at 2,000 tons per day. Indicated official reserves here are 8,289,207 tons averaging 0.101% uranium oxide, which will supply a mill of 4,000 tons per day capacity for almost 6-years. (Lake Nordic is one of the three mills and four mines operated by Northspan in the Blind River uranium area of Northern Ontario.)

AUSTRALIA:- Australasian Oil Explorations, Ltd., together with Stanleigh Uranium Mining Corp. (Canada), expects to form a new company on a 50-50 basis to conduct exploration of a uranium property here; new company is tentatively known as Austand Uranium Mining Corp., Ltd. The property, in the Mount Isa region, has been partially explored by drilling to a depth of 500-ft. A deposit containing an estimated 300,000 tons grading 0.2%-0.25% uranium oxide over widths of 14-98 ft. has been indicated, company officials advise. (Stanleigh's money outlays in this project have been underwritten by Standard Ore & Alloys Corp., New York, and Astra Iron & Steel Corp., Montreal, in exchange for one-half of Stanleigh's interest in the new company, according to H. S. Strouth, Stanleigh president.)

PERMITS, LICENSES...issued for nuclear projects...

Union Carbide Corp., New York, is to receive USAEC permit for construction of research reactor at the company's new research center in Sterling Forest, Orange County, N. Y. AMF Atomics, Inc., will design and build the reactor, which will be a 5,000 thermal kilowatt research reactor of the pool type; estimated cost of the facility is placed at \$1,515,000.

Permit is to be issued by the USAEC to General Electric Co. for construction of research reactor at its Vallecitos Atomic Laboratory in the Pleasanton-Livermore area of California. To be known as the nuclear test reactor, it will be a 50 thermal kilowatt facility, light water cooled and moderated, using graphite as a reflector.

PEOPLE...in nuclear work...

Harvey Brooks has been appointed new member of the Advisory Committee on Reactor Safeguards to the USAEC. Dr. Brooks is dean of engineering and applied physics, Harvard University. (This new Advisory Committee, which Congress last session established as a statutory body, replaces former group set up in 1953. Dr. Brooks joins 8 other appointees who had served also on the old Committee; additional appointments will be made to bring the Committee to the 15 provided by law.)

John J. Flaherty has become assistant to the general manager of Atomics International division of North American Aviation, Inc., Canoga Park, Calif. Mr. Flaherty had been manager of the Chicago operations office of the USAEC since 1954, and with the USAEC and its predecessors for over 14 years.

Franklin Michaels has been named assistant manager of the nuclear power division of Hagan Chemicals & Controls, Inc., Pittsburgh. Mr. Michaels, with Hagan since 1949, will supervise the adaptation of Hagan control systems and instruments to nuclear power reactors.

Sincerely,

The Staff,  
ATOMIC ENERGY NEWSLETTER

